

Claims

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3 1. Heat exchanger (10) between a cooling circuit and an exhaust-gas line of

4 an internal combustion engine that comprises a coolant inflow (26) and a coolant

5 return (28) for coolant ducts (14), as well as an exhaust-gas inlet (30) and an

6 exhaust-gas outlet (32) for exhaust-air ducts (36), characterized in that it is

7 arranged in a main exhaust-gas flow (34), and that a shutoff device (20) is

8 provided in the coolant inflow (20).

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10 2. Heat exchanger (10) according to Claim 1, characterized in that a gas

11 reservoir (16) is connected at a high point (24) of the coolant ducts (14), from

12 which, when the shutoff device (20) is closed and an upper limit temperature of

13 the coolant is reached, gas is directed from the gas reservoir (16) into the coolant

14 ducts (14) and displaces the coolant from the heat exchanger (10), and that the

15 gas is returned to the gas reservoir (16) shortly before the shutoff device (20) is

16 opened.

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18 3. Heat exchanger (10) according to Claim 2, characterized in that the gas

19 reservoir (16) is designed as a bellows, on one face (48) of which a connecting

20 line (18) is arranged and on the opposite face (50) of which an actuator (22) acts.

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22 4. Heat exchanger (10) according to Claim 3, characterized in that the

23 actuator (22) is operated electrically, hydraulically and/or pneumatically.

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25 5. Heat exchanger (10) according to one of the preceding claims,

26 characterized in that it is arranged in a main exhaust-gas flow (34) in the

27 direction of flow behind a catalytic exhaust-gas converter.

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29 6. Heat exchanger (10) according to one of the Claims 1 or 5, characterized

30 in that, between the exhaust-gas inlet (30) and the exhaust-gas outlet (32), a

31 bypass line (56) is provided, on the branch of which a shutoff device (58) is

- 1 arranged in order to control the exhaust- gas inlet (30) and the bypass line (56) in
- 2 complementary fashion.

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